WHAT IS CLAIMED IS:

1. (Amended) A method for fabricating an LDD thin film transistor, including:

a step of forming a semiconductor layer on the substrate;

a step of forming a metal film on the semiconductor layer;

a provisional gate electrode-making step of making a provisional gate electrode from a the metal film for gate electrode formation by using a resist which has been hardened and patterned by photolithography and postbaking;

a first impurity-injecting step of injecting impurities in high concentrations into the semiconductor layer while using as a mask the provisional gate electrode having the resist used to form the provisional gate electrode thereon;

an isolated resist-etching step of moving both ends of the resist in a channel direction towards the center by etching, thereby exposing surfaces of both ends of the provisional gate electrode in the channel direction;

a provisional gate electrode end-etching step of etching exposed both ends of the provisional gate electrode while using the remaining resist as a mask; and

a second impurity-injecting step of injecting impurities in low concentrations into the semiconductor layer while using as a mask a gate electrode completed by etching the both ends of the provisional gate electrode.

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2.(Amended) A method for fabricating an LDD thin film transistor, including:

a step of forming a semiconductor layer on the substrate;

a step of forming a metal film on the substrate;

a step of coating the metal film with a resist for forming a gate electrode;

a resist end surface-processing step of processing the resist into a pattern corresponding to a gate electrode to be obtained, the patterned resist having tapered end surfaces each with projecting lower edge;

a provisional gate electrode-forming step of forming a provisional gate electrode by etching the metal film while using the resist processed to be tapered as a mask;

a first impurity-injecting step of injecting impurities in high concentrations into the semiconductor layer while using as a mask the provisional gate electrode having the resist with tapered side surfaces thereon;

an isolated resist-etching step of etching the resist to remove both end portions in the channel direction of the resist, thereby exposing both ends of the gate electrode in the channel direction;

a provisional gate electrode end-removing step of removing the exposed both ends of the gate electrode while using the remaining resist as a mask; and

a second impurity-injecting step of injecting the impurities

in low concentrations into the semiconductor layer while using as a mask the gate electrode whose both ends have been removed.

3.(Amended) The method for fabricating an LDD thin film transistor in accordance with claim 2, wherein the patterned resist is shaped into hemisphere by melting with heat in the resist end surface-processing step.

4.(Amended) The method for fabricating an LDD thin film transistor in accordance with claim 2, wherein, in the resist end surface-processing step, a top portion of the patterned resist on the metal film is heated at temperatures higher than the highest temperature at which preservation in shape of the resist is ensured, to shrink a top portion of the patterned resist.

5.(Amended) The method for fabricating an LDD thin film transistor in accordance with claim 2, wherein, in the resist end surface-processing step, the patterned resist is prebaked at lower temperatures than the lowest temperature at which preservation in shape of the resist is ensured.

6.(Amended) The method for fabricating an LDD thin film transistor in accordance with claim 5, wherein, in the resist end surface-processing step, the resist on the metal film is exposed in order to be patterned under a defocused condition in

photolithography.

7.(Amended) The method for fabricating an LDD thin film transistor in accordance with claim 6, wherein, in the resist end surface processing step, an exposure is conducted with the use of a perforated pattern photomask and a negative photo resist in photolithography.

8.(Amended) The method for fabricating an LDD thin film transistor in accordance with claim 2, the tapered end surfaces are removed by utilizing an area-proportional chemical reaction of the resist in the resist-end-surface-processing step.

9.(Amended) The method for fabricating an LDD thin film transistor in accordance with claim 1, wherein the provisional-gate-electrode-making step includes:

a first resist-application substep of applying a first resist having high postbaking temperatures on the metal film for gate electrode formation;

a second resist-application substep of applying a second resist having lower postbaking temperatures than the first resist on the first resist;

an exposure-and-development substep of exposing the first resist and the second resist while using a mask for electrode formation, and then developing the first resist and the second

resist;

a high temperature-baking substep of postbaking the first resist and the second resist at postbaking temperatures not causing the first resist to deform; and

a provisional gate electrode-patterning substep of forming a provisional gate electrode by pattering the metal film for gate electrode formation while using the first resist and the second resist as a mask.

10.(Amended) The method for fabricating an LDD thin film transistor in accordance with claim 1, wherein the provisional gate electrode-making step includes a low temperature-prebaking substep of prebaking the resist applied on the metal film for gate electrode formation at lower temperatures than the lowest temperature at which preservation in shape of the resist is ensured.

11.(Amended) The method for fabricating an LDD thin film transistor in accordance with claim 10, wherein, in the resist end surface-processing step, the resist on the metal film is exposed in order to be patterned under a defocused condition in photolithography.

12.(Amended) The method for fabricating an LDD thin film transistor in accordance with claim 11, wherein, in the resist

end surface-processing step, an exposure is conducted with the use of a perforated pattern photomask and a negative photo resist in photolithography.

13. The method for fabricating an LDD thin film transistor in accordance with claim 1 further including an isolated resist-hemisphering step of hemisphering a surface of the resist formed on the provisional gate electrode by melting at fixed temperatures higher than its melting point or softening point prior to the isolated resist-etching step.

14.(Amended) The method for fabricating an LDD thin film transistor in accordance with claim 13, wherein a melt flow resist is employed as the resist.

15.(Amended) The method for fabricating an LDD thin film transistor in accordance with claim 1 further including, prior to the isolated resist-etching step, a step of heat-shrinking a top surface of the resist formed on the gate electrode by heating at temperatures higher than the highest temperature at which the resist material does not deform, thereby broadening both ends of the resist downwardly.

16(Amended). The method for fabricating an LDD thin film transistor in accordance with claim 1 wherein, in the isolated

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resist-etching step, both end portions of the resist in the channel direction are removed by means of ashing with the use of a gas containing at least one of O_2 and ozone.

17.(Amended) A method for fabricating an offset thin film transistor including:

a step of forming a semiconductor layer on the substrate;

a step of forming a metal film on the semiconductor layer;

a provisional gate electrode-making step of making a provisional gate electrode from the metal film for gate electrode formation by using a resist;

an impurity-injecting step of injecting impurities in high concentrations into the semiconductor layer while using as a mask the provisional gate electrode having the resist used to form the provisional gate electrode thereon;

a resist end-tilting step of processing the resist to have a pair of tilted end surfaces each with projecting lower edge in the channel direction, which is going to be used or has been used to form the provisional gate electrode, before the provisional gate electrode-making step or before or after the impurity-injecting step;

a resist-etching step of moving both ends of the resist in the channel direction towards the center, thereby exposing both ends of the provisional gate electrode in the channel direction; and

a gate electrode-forming step of etching exposed both ends

of the provisional gate electrode while using the remaining resist as a mask.

18.(Amended) A method for fabricating an LDD thin film transistor including:

a bottom gate transistor-formation basic step of stacking a gate electrode, a gate insulator film, and a semiconductor layer in this order onto a front surface of a substrate;

a metal film-forming step of forming a metal film for an impurity injection mask on the semiconductor layer;

a resist film-forming step of forming a resist film on the metal film;

a resist film-patterning step of patterning the resist film by exposing from a rear side of the substrate while using the gate electrode as an exposure mask;

a first impurity injection mask-forming step of patterning the metal film for the impurity injection mask while using the patterned resist film as a mask;

a first impurity-injecting step of injecting impurities in high concentrations from the front side of the substrate while using the first impurity injection mask as a mask;

an isolated resist end-tilting step of treating the patterned resist on the patterned first impurity injection mask to have tilting side surfaces of both ends in the channel direction towards the center;

an isolated resist-etching step of moving both ends of the resist in a channel direction towards the center, thereby exposing both ends of the first impurity injection mask provided under the resist which is so processed that the side surfaces of both ends thereof are tilted in the channel direction towards the center;

a second impurity injection mask-forming step of removing the exposed both ends of the first impurity injection mask while using the remaining resist as a mask; and

a second impurity-injecting step of injecting the impurities in low concentrations from the front side of the substrate while using the second impurity injection mask as a mask.

19.(Amended) A method for fabricating an LDD thin film transistor including:

a bottom-gate transistor-formation basic step of stacking a gate electrode, a gate insulator film, a semiconductor layer, and a protective insulator film in this order onto a front surface of a substrate;

a metal mask-forming step of forming a metal film for an impurity injection mask on the semiconductor layer;

a resist film-forming step of forming a resist film on the metal mask;

a resist film-patterning step of patterning the resist film by exposing from a rear side of the substrate while using the gate electrode as an exposure mask;

a first impurity injection mask-forming step of patterning the metal film for the impurity injection mask while using the patterned resist film as a mask;

a first impurity-injecting step of injecting impurities in high concentrations from the front side of the substrate while using the first impurity injection mask as a mask;

an isolated resist end-tilting step of tilting side surfaces of both ends of the patterned resist on the patterned first impurity injection mask in the channel direction towards the center;

an isolated resist-etching step of moving both ends of the resist in a channel direction towards the center, thereby exposing both ends of the first impurity injection mask provided under the resist which is so processed that the side surfaces of both ends thereof are tilted in the channel direction towards the center;

a second impurity injection mask-forming step of removing exposed both ends of the first impurity injection mask while using the remaining resist as a mask; and

a second impurity-injecting step of injecting the impurities in low concentrations from the front side of the substrate while using the second impurity injection mask as a mask.

20.(Canceled)

21.(Canceled)

22.(Canceled)

23.(Canceled)

24. A top-gate LDD thin film transistor comprising:

a gate electrode having a thickness of not less than 100 nm nor more than 250 nm; and

insulating reaction product films for coating both ends of the gate electrode in a channel direction, the insulating reaction product films being oxide films of the gate electrode material each being 0.075 -- 0.5 μ m long and thick enough to function as a mask at a time of impurity injection.

25.(Amended) A top-gate LDD thin film transistor including:

a gate electrode having a thickness of not less than 100 nm nor more than 250 nm; and

insulating reaction product films for coating both ends of the gate electrode in a channel direction, the insulating reaction product films being oxide films of the gate electrode material each being 0.075 -- 0.5 μ m long and thick enough to function as a mask at a time of impurity injection, wherein a semiconductor layer directly below the insulating reaction product films has:

an offset region on a gate electrode side; and

a low-concentration impurity-injected region on a side

opposite to the gate electrode side.

26. A top-gate LDD thin film transistor including:

a gate electrode having a thickness of not less than 100 nm nor more than 250 nm; and

insulating reaction product films for coating both ends of the gate electrode in a channel direction, the insulating reaction product films being oxide films of the gate electrode material each being 0.075 -- 0.5 μm long and thick enough to function as a mask at a time of impurity injection, the LDD thin film transistor is characterized in that a semiconductor layer directly below the insulating reaction product films has a low-concentration impurity intruded region due to heat diffusion or scattering on the gate electrode side; and

a low-concentration impurity injected region on a side opposite to the gate electrode side.

27.(Canceled)

28. A top-gate LDD thin film transistor including:

a gate electrode having a thickness of not less than 100 nm nor more than 250 nm; and

a semiconductor layer having, at each end in a channel direction under the gate electrode, an offset region on the gate electrode side and a low-concentration impurity injected region on

a side opposite to the gate electrode side in a range having a length of 0.075 -- 0.5 μ m on both ends of the channel region provided under the gate electrode in the channel direction.

29. A top-gate LDD thin film transistor including:

a gate electrode having a thickness of not less than 100 nm nor more than 250 nm; and

a semiconductor layer having, at each end in a channel direction under the gate electrode, a low-concentration impurity intruded regions due to heat diffusion or scattering on the gate electrode side and a low-concentration impurity injected region on a side opposite to the gate electrode side in a range having a length of 0.075 -- 0.5 μ m on both ends of the channel region provided under the gate electrode in the channel direction.

30.(Canceled)

31.(Canceled)

32.(Amended) The top-gate LDD thin film transistor in accordance with claim 30, wherein the semiconductor layer is a polysilicon layer.

33. The thin film transistor in accordance with claim 32, wherein the electric resistance in the low-concentration impurity

injected region is 20 kΩ/□ and 100 kΩ/□.

34. A method of fabricating an LDD thin film transistor including:

a first impurity-injecting step of injecting impurities in low concentrations while using as a mask a gate electrode made from a metal film of 300 -- 500 nm-thick;

a reaction product film-forming step of forming reaction product films of 0.075 -- 0.5 μm-long oxide films or the like of the gate electrode material metal at both ends of the gate electrode in a channel direction by applying a reactive fluid to the gate electrode; and

a second impurity-injecting step of injecting the impurities in high concentrations while using as a mask the gate electrode having the reaction product films at both ends thereof in the channel direction provided in the reaction product film-forming step.

35.(Amended) The method of fabricating an LDD thin film transistor in accordance with claim 34, wherein the reaction product film is a thermal oxide film formed by oxidizing the gate electrode material metal with heat.

36. The method of fabricating an LDD thin film transistor in accordance with claim 35 further including a gate electrode

material-selecting step of selecting an Mo-W alloy having Mo content of 15 -- 50 atom% as a material of the gate electrode.

37. (Amended) A method of fabricating an LDD thin film transistor, including:

a first impurity-injecting step of injecting impurities in low concentrations to a semiconductor layer while using as a mask a gate electrode made from a metal film of 300 -- 500 nm-thick;

a reaction product film-forming step of forming reaction product films of 0.075 -- 0.5μm long oxide films or the like of the gate electrode material metal at both ends of the gate electrode in a channel direction by applying a reactive fluid to the gate electrode;

a second impurity injecting step of injecting impurities in high concentrations while using as a mask the gate electrode having the reaction product films at both ends thereof in the channel direction provided in the reaction product film-forming step; and

a reaction product film-removing step of removing the reaction product films of the oxide films or the like of the metal in both ends of the gate electrode in the channel direction formed in the reaction product film-forming step.

38. A method of fabricating an LDD thin film transistor, including:

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a reaction product film-forming step of forming reaction product films of 0.075 -- 0.5μm long oxide films or the like of the gate electrode material metal at both ends of the gate electrode in a channel direction by applying a reactive fluid to the gate electrode made of a metal film of 300 -- 500 nm-thick;

a first impurity-injecting step of injecting impurities in high concentrations while using as a mask the gate electrode having the reaction product films at both ends thereof in the channel direction provided in the reaction product film-forming step;

a reaction product film-removing step of removing the reaction product films of the oxide films or the like of the metal in both ends of the gate electrode in the channel direction formed in the reaction product film-forming step; and

a second impurity-injecting step of injecting impurities in low concentrations while using as a mask the gate electrode from which the reaction product films have been removed.

39.(Amended) The method of fabricating an LDD thin film transistor in accordance with claim 37, wherein a thermal oxide film as the reaction product film is formed by oxidizing the gate electrode material metal with heat.

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40.(Canceled)

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41. A method of fabricating an LDD thin film transistor, including:

a first impurity-injecting step of injecting impurities in low concentrations while using as a mask a gate electrode made of a metal film of 300 -- 500 nm thick;

a reaction product film-forming step of forming reaction product films of 0.075 -- 0.5μm-long oxide films or the like of the gate electrode material metal at both ends of the gate electrode in a channel direction by applying a reactive fluid to the gate electrode;

a second impurity-injecting step of injecting impurities in high concentrations while using as a mask the gate electrode having the reaction product films at both ends thereof in the channel direction provided in the reaction product film forming step; and

a reverse reaction step of returning the reaction product films of oxide films of the metal in both ends of the gate electrode in a channel direction formed in the reaction product film-forming step to an original metal through a reverse reaction such as reduction.

42.(Amended) The method of fabricating an LDD thin film transistor in accordance with claim 41, wherein a thermal oxide film as the reaction product film is formed by oxidizing the gate electrode material metal with heat.

43.(Amended) The method of fabricating an LDD thin film transistor in accordance with claim 41, wherein the gate electrode is made of an Mo-W alloy having Mo content of 15 -- 50 atom%.

44. A method of fabricating an LDD thin film transistor, including:

an oxide film- forming step of forming 0.05 -- 0.5μm-thick oxide films of the gate electrode material metal at both ends of a gate electrode in the channel direction by partly oxidizing the gate electrode which is made of a 300 -- 500 nm-thick metal film; and

a diagonal direction high voltage impurity-injecting step of injecting impurities at high voltages from both sides in the channel direction at the same time or in two installments while using as a mask the gate electrode provided with the oxide films.

45. A method of fabricating an LDD thin film transistor, including:

an oxide film-forming step of forming 0.05 -- 0.5μm-long oxide films at both ends of a gate electrode in the channel direction by partly oxidizing the gate electrode which is made of a 300 -- 500 nm-thick metal film;

a high voltage impurity injecting step of injecting impurities at high voltages while using as a mask the gate electrode provided with the oxide films; and

a dispersing step of further dispersing the impurities which

have been injected in the high voltage impurity-injecting step and diffused towards the center of the gate electrode in the channel direction when a semiconductor is heat-processed after impurity injection or when the oxide films formed in both ends of the gate electrode are heated to be removed or reduced.

46.(Amended) A method of fabricating an offset thin film transistor, including:

a reaction product film-forming step of forming reaction product films of oxide films of a 0.075 -- 0.5μm-long gate electrode material metal at both ends of the gate electrode in a channel direction by thermal oxidizing the gate electrode which is made of a 300 -- 500 nm-long metal film;

an impurity-injecting step of injecting impurities to the semiconductor layer in high concentrations while using as a mask the gate electrode provided with the reaction product films; and

an oxide film removing step of removing the metal oxide films in both ends of the gate electrode in the channel direction after the impurity-injecting step.

47.(Canceled)

48.(Canceled)

49.(Canceled)

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50.(Canceled)

51.(Canceled)

52.(Amended) The method of fabricating an offset thin film transistor in accordance with claim 46, wherein polysilicon is used as semiconductor material of the offset thin film transistor.

53.(New) The method for fabricating an LDD thin film transistor in accordance with claims 2, wherein, in the isolated resist-etching step, both end portions of the resist in the channel direction are removed by means of ashing with the use of a gas containing at least one of O_2 and ozone.

54.(New) The method of fabricating an LDD thin film transistor in accordance with claim 38, wherein a thermal oxide film as the reaction product film is formed by oxidizing the gate electrode material metal with heat.